REMARKS

Claims 2-25 have been amended. Claims 26-67 have been added. No new matter has been introduced as a result of these amendments. Claims 2-67 are currently pending in the application.

The Examiner objected to claims 4-6, 8-9, 12-14, 16-17, 20-22, and 25 for being dependent upon a rejected base claim. The Examiner stated claims 4-6, 8-9, 12-14, 16-17, 20-22, and 25 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Examiner rejected claims 2-3, 7, 10-11, 15, 18-19, and 23 under 35 USC § 102(b) as being anticipated by Judice (USPN 3,937,878). These objections and rejections are respectfully traversed and Applicant requests reconsideration of the application.

102(b) Rejection

In order for a reference to anticipate an invention, each and every element of the claimed invention must be found in a single reference. "Moreover, it is incumbent upon the examiner to identify wherein each and every facet of the claimed invention is disclosed in the applied reference." Ex parte Levy, 17 USPQ2d 1461, 1462 (Bd Pat App & Inter 1990). Applicant respectfully submits that Judice does not anticipate Applicant's claimed invention because Judice does not teach or disclose each and every element of the claimed invention.

In rejecting claims 2-3, 7, 10-11, 15, 18-19, and 23, the Examiner stated "Judice discloses (column 5, lines 28-46) a halftone arrangement in which a halftone signal for a first frame is generated in a conventional manner, and a halftone signal for a subsequent frame is generated by identifying the halftone pixels which are different from those in the preceding frame and transmitting only the information relating to these changed halftone pixels." Applicant notes, however, that Judice uses only one halftone technique for halftoning, a single dither matrix with dither threshold

values. Every pixel is assigned a dither threshold value from the dither matrix and that dither threshold value is used whenever the pixel is halftoned during the "conditional replenishment" process (see col. 6, line 60 to col. 3, line 2; and col. 3, line 63 to col. 4, line 8).

Unlike Judice, one aspect of Applicant's invention uses at least two halftone techniques, as claimed in amended independent claims 1, 10, and 18. The halftone technique changes from the previously used halftone technique after a certain number of input images have been halftoned. For example, the halftone technique may change from the previously used halftone technique every time the input image is halftoned. Alternatively, the halftone technique may change after a predetermined number of images have been halftoned, or the halftone technique may change at random times. Applicant respectfully submits that Judice does not teach or disclose this aspect of Applicant's claimed invention. Therefore, Judice does not anticipate Applicant's invention as claimed.

Claims 3-9 and 26-31 depend from independent claim 2, claims 11-17 and 32-37 depend from independent claim 10, and claims 19-25 and 38-43 depend from independent claim 18. Since Judice does not anticipate amended independent claims 1, 10 and 18, Applicant respectfully submits Judice does not anticipate dependent claims 2-9, 11-17, and 19-43 either. Applicant therefore requests the allowance of claims 2-43.

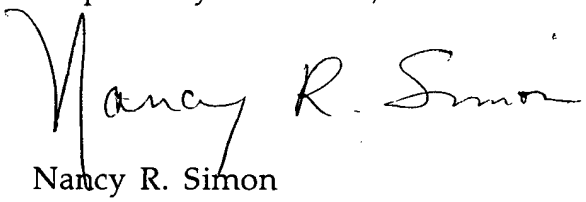
New claims 44-67 claim another aspect of Applicant's invention. A starting location within the input image is determined and the image is then halftoned by tiling a halftone technique over the image beginning at the starting location. Additionally, the starting location is offset from the previously used starting location after a certain number of images have been halftoned. For example, the starting location may be offset from the previously used location every time the input image is halftoned. Alternatively, the starting location may be offset after a predetermined number of images have been halftoned, or the starting location may

be offset at random times. Applicant respectfully submits that Judice does not anticipate Applcant's claimed invention in claims 44-67 because Judice does not teach or disclose each and every element in claims 44-67. Applicant therefore requests the allowance of claims 44-67.

In light of the amendments and discussion above, Applicant believes that all claims currently remaining in the application are allowable over the prior art, and respectfully requests allowance of such claims.

Respectfully submitted,

Date: March 31, 2003



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the specification:

The paragraph beginning at page 6, line 29, has been rewritten as follows:

> **Figure 2a** illustrates an exemplary image comprised of pixels. Image **200** is shown as a 12x12 image comprised of 144 pixels. Pixels are usually arranged on an orthogonal grid, with the pixels placed at evenly spaced lattice points. Typically image **200** is associated with the (x,y) coordinate system, with the rows as the x coordinate and the columns as the y coordinate. Pixel **202** is usually considered the pixel in the (0,0) location. With pixel **202** at (0,0), pixel **204** is located at [(7,5)] (6,4) and pixel **206** is positioned at [(10,11)] (9,10) in the image.

The paragraph beginning at page 9, line 4, has been rewritten as follows:

> In **Figure 5a**, image **500** is a 9x9 image, and is comprised of 81 pixels. Pixel **502** is located at the (0,0) position in image **500**. Halftone mask **504** will be used to halftone image **500**. In this example, halftone mask **504** is a 3x3 array, comprised of nine threshold values. Halftone mask **504** is placed at the initial location (0,0) in image **500**, and is then used to halftone the image by tiling halftone mask **504** over the entire image. This creates the first halftoned frame. In **Figure 5b** halftone mask **504** is offset to location [(7,6)] (5,6) in the image. The second halftoned frame is created when image **500** is halftoned again.

The paragraph beginning at page 9, line 14, has been rewritten as follows:

> Halftone mask **504** is then offset again to location [(4,7)] (6,3), represented in **Figure 5c** by pixel **508**. Image **500** is again halftoned, and a third frame is produced. Finally, in **Figure 5d**, halftone mask **504** is offset to pixel **510**, located at [(7,2)] (1,6), and a fourth halftoned frame is created. The resulting halftoned frames are then displayed in a sequence, thereby creating the output image. This process of changing the offsets of halftone mask **504** within image **500** repeats until halftoning is complete.

The paragraph beginning at page 9, line 28, has been rewritten as follows:

> The halftoned frame shown in **Figure 6a** was created by positioning the halftone mask at location (38,28) in the image and then halftoning the image. The halftone mask is offset to [to] location (33,25) in the image and the image is halftoned a second time, resulting in the halftoned frame shown in **Figure 6b**. A third halftoned frame illustrated in **Figure 6c** is then generated by offsetting the halftone mask to location (11,17) in the image. Continuing with this process, the halftoned frames shown in **Figures 6d, 6e, 6f, 6g and 6h** are generated by offsetting the halftone mask to locations (10,9), (12,6), (29,17), (4,0), and (25,23), respectively.

In the claims:

Claims 2-25 have been amended as follows:

2. (Amended Once) A method for halftoning an input image comprising the steps of:

halftoning the input image using one of at least [one] two halftone techniques [technique]; and

[generating an output image comprised of at least two individually halftoned frames, wherein the at least one halftone technique varies from frame to frame.]

repeating the step of halftoning the input image, wherein the one of at least two halftone techniques changes from the previously used halftone technique after a certain number of input images have been halftoned.

3. (Amended Once) The method of claim 2, further comprising the step of successively outputting [transmitting in succession] the [at least two] halftoned input images [frames].

4. (Amended Once) The method of claim 2, wherein the step of repeating the step of halftoning the input image using one of at least [one] two halftone [technique]

techniques comprises the step of repeating the step of halftoning the input image [by] wherein the one of at least two halftone techniques changes from the previously used halftone technique every time the input image is halftoned [sequencing the at least one halftone technique from frame to frame].

5. (Amended Once) The method of claim [4] 2, [wherein] further comprising the step of reading the one of at least [one] two halftone [technique is] techniques from [determined prior to halftoning and stored in] a memory prior to halftoning the input image.

6. (Amended Once) The method of claim [4] 2, [wherein] further comprising the step of determining the one of at least [one] two halftone [technique is] techniques [determined] in real time prior to halftoning [a frame] the input image.

7. (Amended Once) The method of claim 2, wherein the step of halftoning the input image using one of at least [one] two halftone [technique] techniques comprises the step of halftoning the input image using at least one transformed halftone technique.

8. (Amended Once) The method of claim [7] 2, wherein the [step of halftoning the input image using] at least [one transformed] two halftone [technique] techniques [comprises the step of offsetting the at least one] are comprised of at least one halftone [technique to different positions in the input image in order to generate halftoned frames] technique having at least one differing halftone parameter.

9. (Amended Once) The method of claim [7] 2, wherein the [step of halftoning the input image using] at least [one transformed] two halftone [technique comprises the step of rotating the at least one] techniques are comprised of different halftone [technique to different positions in the input image in order to generate halftoned frames] methods.

10. (Amended Once) An apparatus for halftoning an input image comprising:

means for halftoning the input image using one of at least [one] two halftone [technique] techniques; and

[means for generating an output image comprised of at least two individually halftoned frames, wherein the at least one halftone technique varies from frame to frame.]

means for repeatedly halftoning the input image, wherein the one of at least two halftone techniques changes from the previously used halftone technique after a certain number of input images have been halftoned.

11. (Amended Once) The apparatus of claim 10, further comprising means for [transmitting in succession] successively outputting the [at least two] halftoned [frames] input images.

12. (Amended Once) The apparatus of claim 10, wherein the means for repeatedly halftoning the input image using one of at least [one] two halftone [technique] techniques comprises means for repeatedly halftoning the input image [by sequencing] wherein the one of at least [one] two halftone [technique] techniques changes from the previously used halftone technique every time the input image is halftoned [from frame to frame].

13. (Amended Once) The apparatus of claim [12] 10, further comprising means for reading the one of at least [one] two halftone [technique] techniques from a memory prior to halftoning the input image.

14. (Amended Once) The apparatus of claim [12] 10, [wherein the at least one halftone technique is determined] further comprising means for determining the

one of at least two halftone techniques in real time prior to halftoning [a frame] the input image.

15. (Amended Once) The apparatus of claim 10, wherein the means for halftoning the input image using one of at least [one] two halftone [technique] techniques comprises means for halftoning the input image using at least one transformed halftone technique.

16. (Amended Once) The apparatus of claim [15] 10, wherein the [means for halftoning the input image using] at least two [one transformed] halftone [technique] techniques [comprises means for offsetting the at least one halftone technique to different positions in the input image in order to generate halftoned frames] are comprised of at least one halftone technique having at least one differing halftone parameter.

17. (Amended Once) The apparatus of claim [15] 10, wherein the [means for halftoning the input image using] at least [one transformed] two halftone techniques [technique comprises means for rotating the at least one halftone technique to different positions in the input image in order to generate halftoned frames] are comprised of different halftone methods.

18. (Amended Once) A computer-readable medium comprising program instructions for halftoning an input image by performing the steps of:

halftoning the input image using one of at least [one] two halftone [technique] techniques; and

[generating an output image comprised of at least two individually halftoned frames, wherein the at least one halftone technique varies from frame to frame.]

repeating the step of halftoning the input image, wherein the one of at least two halftone techniques changes from the previously used halftone technique after a certain number of input images have been halftoned.

19. (Amended Once) The computer-readable medium of claim 18, further comprising program instructions for performing the step of successively outputting [transmitting in succession] the [at least two] halftoned [frames] input images.

20. (Amended Once) The computer-readable medium of claim 18, wherein the step of repeating the step of halftoning the input image using one of at least [one] two halftone [technique] techniques comprises the step of repeating the step of halftoning the input image by [sequencing the at least one halftone technique from frame to frame] changing the one of at least two halftone techniques from the previously used halftone technique every time the input image is halftoned.

21. (Amended Once) The computer-readable medium of claim [20] 18, further comprising program instructions for performing the step of reading the one of at least [one] two halftone [technique] techniques from a memory prior to halftoning the input image.

22. (Amended Once) The computer-readable medium of claim [20] 18, further comprising program instructions for performing the step of determining the one of at least [one] two halftone [technique] techniques in real time prior to halftoning [a frame] the input image.

23. (Amended Once) The computer-readable medium of claim 18, wherein the step of halftoning the input image using one of at least [one] two halftone [technique] techniques comprises the step of halftoning the input image using at least one transformed halftone technique.

24. (Amended Once) The computer-readable medium of claim [23] 18, wherein the [step of halftoning the input image using] at least two [one transformed] halftone [technique] techniques [comprises the step of offsetting the at least one halftone technique to different positions in the input image in order to generate halftoned frames] are comprised of at least one halftone technique having at least one differing halftone parameter.

25. (Amended Once) The computer-readable medium of claim [23] 18, wherein the [step of halftoning the input image using] at least two [one transformed] halftone techniques [technique comprises the step of rotating the at least one halftone technique to different positions in the input image in order to generate halftoned frames] are comprised of different halftone methods.

New Claims 26-67 have been added.